

Factorising - 3 terms where coefficient of $x^2 = 1$ ($a=1$)

$$ax^2 + bx + c$$

① find a factor pair of 'c' that adds to 'b'

eg. $x^2 + 7x + 12$

$$\overset{(2)}{(x+3)} \overset{(2)}{(x+4)} \\ \textcircled{3} \quad \textcircled{3}$$

① factor pairs of 12:

$$\begin{array}{ccc} 1 & -1 & 2 & -2 & \textcircled{3} & -3 \\ 12 & 12 & 6 & -6 & \textcircled{4} & -4 \end{array} \left. \vphantom{\begin{array}{ccc} 1 & -1 & 2 & -2 & \textcircled{3} & -3 \\ 12 & 12 & 6 & -6 & \textcircled{4} & -4 \end{array}} \right\} \begin{array}{l} \text{which pair} \\ \text{adds to 7?} \end{array}$$

② write two brackets and place 'x' at the beginning of each

③ write in one factor in first bracket & the other factor in the other bracket

④ remember correct signs + or -

$$x^2 + 5x + 6 \\ = (x+2)(x+3)$$

① if 'c' is positive and 'b' is positive then the factors are both positive

$$x^2 - 5x + 6 \\ = (x-2)(x-3)$$

② if 'c' is positive and 'b' is negative then the factors are both negative

$$x^2 - 5x - 6 \\ = (x+1)(x-6)$$

③ if 'c' is negative and 'b' is negative then the larger factor is negative and the smaller factor is positive

$$x^2 + 5x - 6 \\ = (x-1)(x+6)$$

④ if 'c' is negative and 'b' is positive then the larger factor is positive and the smaller factor is negative